

Alfalfa Fertility Experiment

An experiment was established during the late spring of 1967 to evaluate, primarily, the effect of method of application and rate of application of phosphate fertilizer on the yield and chemical analysis of alfalfa hay. Also, variables of potassium and zinc were included. Two locations were established; at the Madras Station the experiment was based on a period of five years and at the Bayless Farm in Powell Butte, a three-year period. The levels of phosphate fertilizer applied were equal in amount to annual applications of 60 and 120# of P_2O_5 for the respective locations with several of the plow-down and disc-in treatments being applied in one application prior to seeding and others as split applications with part incorporated prior to seeding and part as surface application during the following years of the experiment. Several fertilizer treatments were duplications of selected phosphate treatments with the exception that 60# of P_2O_5 was banded at seeding time to the side of the seed as mono-ammonium phosphate (11-48).

The 1968 harvest is the first year of harvest for the experiment and the results are shown by cutting in Table Nos. 11 and 13 with a summary of yield and plant analysis in Table Nos. 12 and 14. There was no significant difference in yield by cutting or the season's total yield at the Madras location. The variation between replications at the Bayless location was even greater. Consequently, no analysis was calculated. However, the yields at either location would be considered acceptable by the farmer.

The soil test at the Madras location indicated a phosphate level approximately twice as high as the Bayless location and the plant analysis reflected some of the difference although the plant phosphate level at both locations would be considered adequate. By some published standards both the calcium and magnesium levels of the plants would be considered deficient. However, the soil test levels were generally adequate to high in these elements.

The level of zinc in the plants would be considered borderline to low but the application of 30# $ZnSO_4$ had no apparent effect on the presence of zinc in the plant sample.

Table No. 11

The Effect of Several Fertilizer Treatments on the Yield of
Alfalfa Hay Showing First, Second, Third Cuttings and Total
Yield

Central Oregon Experiment Station - Madras Location - 1968

Fertilizer Application #/Acre					Alfalfa Hay Yield Tons/Acre			
PD	P ₂ O ₅				By Cutting			
	D	SA	K	ZnSO ₄	First	Second	Third	Total
-	-	-	400	30	3.57	2.23	1.60	7.40
300	-	60	400	30	3.81	2.27	1.61	7.69
300	-	-	400	30	4.12	2.52	1.53	8.17
600	-	-	400	30	3.38	2.20	1.43	7.01
-	300	-	400	30	4.09	2.51	1.56	8.16
-	600	-	400	30	3.49	2.38	1.67	7.54
-	60	60	400	30	3.55	2.27	1.54	7.36
-	120	120	400	30	3.62	2.51	1.44	7.57
- *	-	-	400	30	3.67	2.24	1.48	7.39
240*	-	-	400	30	3.35	2.41	1.60	7.36
- *	240	-	400	30	3.76	2.17	1.66	7.59
- *	-	60	400	30	3.67	2.44	1.60	7.71
240*	-	-	-	30	3.41	2.38	1.50	7.29
240*	-	-	400	-	3.51	2.55	1.59	7.65
240*	-	-	-	-	3.18	2.28	1.55	7.01
L.S.D.	@ 5%				ns	ns	ns	ns

Key to P₂O₅ Treatments

PD = Plow Down

D = Discd In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Table No. 12

The Effect of Several Fertilizer Treatments on the Content of Phosphorus, Potassium, Calcium, Magnesium, Zinc, and Manganese in Alfalfa Hay

Madras - 1968

Fertilizer Application #/Acre					Total Yield Tons/A.	Analysis of Plant Material Percentage					
P ₂ O ₅		SA	K	ZnSO ₄		P	K	Ca	Mg	PPM	
PD	D				Zn					Mn	
-	-	-	400	30	7.40	0.36	3.42	1.07	0.22	17.5	28
300	-	-	400	30	7.69	0.40					
300	-	-	400	30	8.17	0.39					
720	-	-	400	30	7.01	0.37					
-	300	-	400	30	8.16	0.37					
-	720	-	400	30	7.54	0.40					
-	60	60	400	30	7.36	0.34					
-	120	120	400	30	7.57	0.35					
- *	-	-	400	30	7.39	0.37					
240*	-	-	400	30	7.36	0.37	3.51	1.07	0.28	18.4	28
- *	240	-	400	30	7.59	0.37					
- *	-	60	400	30	7.71	0.34					
240*	-	-	-	30	7.29	0.37	3.20	1.12	0.26	16.2	26
240*	-	-	400	-	7.65	0.37	3.34	1.15	0.27	15.0	28
240*	-	-	-	-	7.01	0.35	3.35	1.15	0.28	16.2	26

Key to P₂O₅ Treatments

PD - Plow Down

D - Disced In

SA - Surface Applied Annually

* 60# P₂O₅ banded at seeding as MAP (11-48)

Table No. 13

The Effect of Several Fertilizer Treatments on the Yield of Alfalfa
Hay by Cutting & Seasons Total

C. R. Bayless Farm, Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					Alfalfa Hay Yield		
P ₂ O ₅					Tons Per Acre		
PD	D	SA	K	ZnSO ₄	First Cut.	Sec. Cut.	Total
-	-	-	400	30	3.43	2.55	5.98
180	-	-	400	30	3.57	3.22	6.79
180	-	-	400	30	3.84	3.15	6.99
360	-	-	400	30	3.83	3.37	7.20
-	180	-	400	30	3.44	3.16	6.60
-	360	-	400	30	3.80	3.01	6.81
-	60	60	400	30	3.72	2.83	6.55
-	120	120	400	30	3.60	2.98	6.58
- *	-	-	400	30	3.53	2.72	6.25
120*	-	-	400	30	4.02	3.29	7.31
- *	120	-	400	30	3.91	3.38	7.29
- *	-	60	400	30	3.62	2.94	6.56
120*	-	-	-	30	3.57	2.76	6.33
120*	-	-	400	-	3.63	2.99	6.62
120*	-	-	-	-	3.70	2.93	6.63

Key to P₂O₅ Treatments

PD - Plow Down

D - Disced In

SA - Surface Applied Annually

* 60# P₂O₅ banded at seeding as MAP (11-48)

Table No. 14

The Effect of Several Fertilizer Treatments on the Content of Phosphorus, Potassium, Calcium, Magnesium, Zinc, & Manganese in Alfalfa Hay

C. R. Bayless Farm, Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					Total Yield Tons/A.	Chemical Analysis of Plant Material					
P ₂ O ₅						Percentage				PPM	
PD	D	SA	K	ZnSO ₄	P	K	Ca	Mg	Zn	Mn	
-	-	-	400	30	5.98	0.31					
180	-	-	400	30	6.79	0.31					
180	-	-	400	30	6.99	0.32					
360	-	-	400	30	7.20	0.32					
-	180	-	400	30	6.60	0.31					
-	360	-	400	30	6.81	0.32					
-	60	60	400	30	6.55	0.33					
-	120	120	400	30	6.58	0.32					
- *	-	-	400	30	6.25	0.32					
120*	-	-	400	30	7.31	0.34					
- *	120	-	400	30	7.29	0.32					
- *	-	60	400	30	6.56	0.34	2.79	1.25	0.24	18 38	
120*	-	-	-	30	6.33	0.33	2.75	1.32	0.24	19 42	
120*	-	-	400	-	6.62	0.32	2.94	1.26	0.24	18 36	
120*	-	-	-	-	6.63	0.32	3.01	1.36	0.27	16 40	

Key to P₂O₅ Treatments

PD - Plow Down

D - Disced In

SA - Surface Applied Annually

* 60# P₂O₅ banded at seeding as MAP (11-48)

Appendix Table II. 10

Soil Test
Alfalfa Fertility Experiment
Central Oregon Experiment Station - Madras, Oregon - 1967

Test	Test Values					Average
	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	
pH						
0-8	6.9	7.1	7.0	7.1	7.0	7.0
8-16	7.4	7.4	7.7	7.4	7.1	7.4
Phosphorus #/Acre						
0-8	50.8	36.0	34.0	48.0	31.6	40.0
8-16	22.0	21.0	13.6	16.0	13.6	17.2
Potassium me/100g						
0-8	1.64	1.47	1.44	1.41	1.30	1.45
8-16	1.30	1.24	1.14	1.09	1.04	1.16
Calcium me/100g						
0-8	9.6	9.2	8.4	7.9	7.2	8.5
8-16	10.6	9.2	9.6	8.6	7.6	9.1
Magnesium me/100g						
0-8	6.40	6.60	6.40	6.60	6.85	6.57
8-16	8.35	7.50	9.00	9.50	9.50	8.77

Appendix Table No. 11

The Effect of Several Fertilizer Treatments on the Yield of Alfalfa Hay
Central Oregon Experiment Station - Madras Location - 1968

First Cutting

Fertilizer Application #/Acre					Hay Yield - Tons Per Acre					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	4.34	3.62	3.96	2.86	3.06	3.57
300	-	-	400	30	4.33	3.45	3.80	3.68	3.82	3.82
300	-	-	400	30	4.54	5.12	3.55	3.42	3.97	4.12
720	-	-	400	30	3.89	3.12	4.11	2.84	2.94	3.38
-	300	-	400	30	4.05	3.90	4.60	4.20	3.71	4.09
-	720	-	400	30	4.65	3.35	3.79	2.81	2.83	3.49
-	60	60	400	30	4.46	4.29	2.62	3.28	3.12	3.55
-	120	120	400	30	4.22	2.74	4.41	3.64	3.11	3.62
-*	-	-	400	30	3.32	4.25	3.76	3.18	3.83	3.67
240*	-	-	400	30	3.59	3.03	3.97	3.74	2.42	3.35
-*	240	-	400	30	2.80	4.42	5.06	3.39	3.22	3.78
-*	-	60	400	30	3.54	4.38	3.61	3.75	3.10	3.68
240*	-	-	-	30	2.11	4.31	3.69	4.01	2.94	3.41
240*	-	-	400	-	2.55	4.71	3.56	3.08	3.65	3.51
240*	-	-	-	-	2.54	3.96	3.13	2.80	3.49	3.18
L.S.D.	@ 5%									ns

Key to P₂O₅ Treatments

PD = Plow Down

D = Disced In

SA = Surface Annual

* 60# P₂O₅ banded at seeding as MAP (11-48)

Appendix Table No. 12

The Effect of Several Fertilizer Treatments on the Yield of Alfalfa Hay
Central Oregon Experiment Station - Madras Location - 1968

Second Cutting

Fertilizer Application #/Acre					Hay Yield - Tons Per Acre					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	1.40	2.66	2.17	1.95	2.98	2.23
300	-	-	400	30	2.21	2.13	2.13	2.45	2.41	2.27
300	-	-	400	30	2.11	2.68	2.53	2.61	2.64	2.52
720	-	-	400	30	2.00	1.95	2.00	2.08	2.95	2.20
-	300	-	400	30	2.25	2.74	2.84	2.48	2.23	2.51
-	720	-	400	30	2.10	2.54	2.51	2.80	1.95	2.38
-	60	60	400	30	2.28	2.86	2.04	2.08	2.09	2.27
-	120	120	400	30	2.22	2.44	2.70	2.54	2.63	2.51
-*	-	-	400	30	2.06	2.83	2.32	1.80	2.21	2.24
240*	-	-	400	30	2.10	2.64	2.45	2.38	2.46	2.40
-*	240	-	400	30	1.76	2.90	2.14	1.80	2.26	2.17
-*	-	60	400	30	2.23	2.80	2.41	2.10	2.64	2.44
240*	-	-	-	30	2.06	2.56	2.13	2.90	2.26	2.38
240*	-	-	400	-	2.22	2.73	2.44	2.31	3.04	2.55
240*	-	-	-	-	1.43	3.03	1.99	2.35	2.62	2.28

Key to P₂O₅ Treatments

PD = Plow Down

D = Discd In

SA = Surface Annual

* 60# P₂O₅ banded at seeding as MAP (11-48)

Appendix Table No. 13

The Effect of Several Fertilizer Treatments on the Yield of Alfalfa Hay
Central Oregon Experiment Station - Madras Location - 1968

Third Cutting

Fertilizer Application #/Acre					Hay Yield - Tons Per Acre					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	* 400	30	1.38	1.50	1.62	1.66	1.83	1.60
300	-	-	400	30	1.27	1.77	1.32	1.57	2.12	1.61
300	-	-	400	30	1.20	1.35	1.35	2.04	1.72	1.53
720	-	-	400	30	0.89	1.35	1.78	1.43	1.71	1.43
-	300	-	400	30	0.89	1.61	1.75	1.69	1.87	1.56
-	720	-	400	30	1.23	1.62	1.86	2.13	1.52	1.67
-	60	60	400	30	0.64	1.54	2.03	1.69	1.79	1.54
-	120	120	400	30	0.88	1.50	1.57	1.72	1.54	1.44
-*	-	-	400	30	0.64	1.68	1.56	1.45	2.04	1.48
240*	-	-	400	30	1.13	1.68	1.99	1.40	1.79	1.60
-*	240	-	400	30	1.17	1.96	1.76	1.78	1.61	1.66
-*	-	60	400	30	1.30	1.56	1.65	1.65	1.82	1.60
240*	-	-	-	30	1.22	1.39	1.17	1.90	1.81	1.50
240*	-	-	400	-	1.17	1.70	1.60	1.69	1.80	1.59
240*	-	-	-	-	1.36	1.76	1.54	1.48	1.62	1.55

Key to P₂O₅ Treatments

PD = Plow Down

D = Discd In

SA = Surface Annual

* 60 # P₂O₅ Banded at seeding as MAP (11-48)

Appendix Table No. 14

Phosphorus Content of Alfalfa as Affected by
Several Fertilizer Treatments
Central Oregon Experiment Station - Madras Location - 1968

Fertilizer Application #/Acre					% Phosphorus					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	0.35	0.37	0.36	0.36	0.36	0.360
300	-	-	400	30	0.39	0.36	0.37	0.40	0.37	0.398
300	-	-	400	30	0.41	0.40	0.40	0.36	0.36	0.386
720	-	-	400	30	0.40	0.36	0.37	0.37	0.36	0.372
-	300	-	400	30	0.41	0.37	0.36	0.34	0.36	0.368
-	720	-	400	30	0.41	0.42	0.41	0.33	0.41	0.396
-	60	60	400	30	0.36	0.31	0.34	0.33	0.34	0.336
-	120	120	400	30	0.41	0.36	0.36	0.33	0.31	0.354
-*	-	-	400	30	0.46	0.37	0.34	0.32	0.36	0.370
240*	-	-	400	30	0.40	0.36	0.38	0.37	0.36	0.374
-*	240	-	400	30	0.41	0.37	0.39	0.30	0.36	0.366
-*	-	60	400	30	0.37	0.34	0.34	0.33	0.33	0.342
240*	-	-	0	30	0.40	0.35	0.38	0.36	0.34	0.366
240*	-	-	400	0	0.41	0.40	0.37	0.34	0.34	0.372
240*	-	-	0	0	0.36	0.40	0.32	0.36	0.31	0.350

Key to P₂O₅ Treatments

PD = Plow Down

D = Disced In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 15

Potassium Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 Central Oregon Experiment Station - Madras Location - 1968

Fertilizer Application #/Acre					% Potassium					
PD	P ₂ O ₅ D	SA	K _v	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	3.15	3.50	3.85	3.20	3.40	3.42
240*	-	-	400	30	3.40	3.15	3.15	3.55	3.30	3.51
240*	-	-	0	30	2.90	3.25	3.30	3.30	3.25	3.20
240*	-	-	400	0	3.55	3.65	3.05	2.90	3.55	3.34
240*	-	-	0	0	3.40	3.15	3.50	3.60	3.10	3.35

Key to P₂O₅ Application
 PD = Flow Down
 D = Discd In
 SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as M/P (11-48)

Appendix Table No. 16

Calcium Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 Central Oregon Experiment Station - Madras Location 1968

Fertilizer Application #/Acre					% Calcium					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	1.10	1.20	0.93	1.10	1.00	1.07
240*	-	-	400	30	1.10	0.95	1.38	1.00	0.93	1.07
240*	-	-	0	30	1.00	1.20	1.28	1.10	1.00	1.12
240*	-	-	400	0	0.95	1.28	1.45	1.05	1.00	1.15
240*	-	-	0	0	1.10	1.45	1.20	1.00	1.00	1.15

Key to P₂O₅ Treatments
 PD = Plow Down
 D = Discd In
 SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 17

Magnesium Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 Central Oregon Experiment Station - Madras Location, 1968

Fertilizer Application #/acre					% Magnesium					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	0.23	0.20	0.20	0.23	0.26	0.224
240*	-	-	400	30	0.28	0.20	0.33	0.29	0.28	0.276
240*	-	-	0	30	0.28	0.26	0.25	0.26	0.26	0.262
240*	-	-	400	0	0.25	0.23	0.29	0.29	0.28	0.268
240*	-	-	0	0	0.29	0.30	0.26	0.30	0.26	0.282

Key to P₂O₅ Treatments

PD = Plow Down

D = Disced In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 18

Manganese Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 Central Oregon Experiment Station - Madras Location, 1968

Fertilizer Application #/Acre					PPM Manganese					
PD	P ₂ O ₅		K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
	D	SA								
-	-	-	400	30	20	40	20	30	30	28
240*	-	-	400	30	20	20	30	40	30	28
240*	-	-	0	30	20	30	40	20	20	26
240*	-	-	400	0	20	40	40	20	20	28
240*	-	-	0	0	20	30	40	20	20	26

Key to P₂O₅ Treatments

PD = Plow Down

D = Disced In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 19

Zinc Content of Alfalfa as Affected by
Several Fertilizer Treatments
Central Oregon Experiment Station - Madras Location, 1968

Fertilizer Application #/Acre					PPM Zinc					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	15	18	20	20	15	17.5
240*	-	-	400	30	18	18	20	18	18	18.4
240*	-	-	0	30	18	15	20	10	18	16.2
240*	-	-	400	0	20	20	10	10	15	15.0
240*	-	-	0	0	10	15	20	18	18	16.2

Key to P₂O₅ Treatments

PD = Plow Down

D = Discd In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 21

The Effect of Several Fertilizer Treatments on the Yield of Alfalfa Hay
C. R. Bayless Farm - Powell Butte, Oregon - 1968

First Cutting

Fertilizer Application #/Acre					Yield of Alfalfa Hay - Tons Per Acre					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-		400	30	2.71	3.93	3.31	4.66	2.53	3.43
180	-		400	30	3.54	3.23	3.50	3.93	3.64	3.57
180	-		400	30	3.38	4.50	4.59	3.46	3.24	3.84
360	-		400	30	2.86	5.08	3.43	3.66	4.12	3.83
-	180		400	30	3.02	3.65	3.67	3.25	3.62	3.44
-	360		400	30	3.32	3.78	4.06	3.77	4.08	3.80
-	60	60	400	30	3.44	4.11	4.82	3.27	2.95	3.72
-	120	120	400	30	3.14	4.10	3.27	3.03	4.48	3.60
-*	-	-	400	30	3.43	3.59	3.28	3.78	3.56	3.53
120*	-	-	400	30	4.46	4.13	3.71	4.32	3.49	4.02
-*	120	-	400	30	4.66	4.27	3.14	3.80	3.68	3.91
-*	-	60	400	30	3.64	3.56	3.37	4.32	3.19	3.62
120*	-	-	0	30	3.89	4.08	2.35	3.74	3.80	3.57
120*	-	-	400	0	2.84	3.64	4.24	3.70	3.70	3.62
120*	-	-	0	0	4.10	3.95	3.80	3.15	3.48	3.70

Key to P₂O₅ Treatments
 PD = Plow Down
 D = Discd In
 SA = Surface Annual

* 60# P₂O₅ banded at seeding as MAP (11-48)
 * 60 # P₂O₅ Banded at seeding as MAP (11-48)

Appendix Table No. 22

The Effect of Several Fertilizer Treatments on the Yield of Alfalfa Hay
C. R. Bayless Farm - Powell Butte, Oregon - 1968

Second Cutting

Fertilizer Application #/Acre					Yield of Alfalfa Hay - Tons Per Acre					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	2.12	2.67	2.65	3.05	2.25	2.55
180	-	-	400	30	2.64	3.00	3.19	3.45	3.83	3.22
180	-	-	400	30	2.89	2.92	3.93	2.92	3.09	3.15
360	-	-	400	30	3.26	3.95	3.41	3.09	3.12	3.37
-	180	-	400	30	2.84	4.05	3.22	3.26	2.44	3.16
-	360	-	400	30	2.64	2.66	3.18	4.10	2.47	3.01
-	60	60	400	30	2.73	3.00	3.75	2.48	2.17	2.83
-	120	120	400	30	3.23	2.53	3.66	2.48	2.97	2.98
-*	-	-	400	30	2.82	2.46	2.54	2.86	2.94	2.72
120*	-	-	400	30	3.55	3.05	3.76	3.32	2.77	3.29
-*	120	-	400	30	4.24	2.86	3.05	3.84	2.90	3.38
-*	-	60	400	30	3.03	3.30	2.86	2.80	2.72	2.94
120*	-	-	0	30	2.91	2.75	2.30	3.17	2.65	2.76
120*	-	-	400	0	2.58	3.09	3.04	3.01	3.22	2.99
120*	-	-	0	0	2.98	3.06	2.64	2.92	3.05	2.93

Key to P₂O₅ Treatments

PD = Plow Down

D = Discd In

SA = Surface Annual

Appendix Table No. 23

Phosphorus Content of Alfalfa as Affected by
Several Fertilizer Treatments
C. R. Bayless Farm - Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					% Phosphorus					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	0.29	0.27	0.30	0.33	0.36	0.310
180	-	-	400	30	0.30	0.30	0.33	0.33	0.30	0.312
180	-	-	400	30	0.30	0.28	0.33	0.34	0.37	0.324
360	-	-	400	30	0.28	0.36	0.30	0.32	0.34	0.320
-	180	-	400	30	0.31	0.30	0.29	0.31	0.36	0.314
-	360	-	400	30	0.30	0.32	0.28	0.34	0.34	0.316
-	60	60	400	30	0.29	0.33	0.34	0.34	0.34	0.328
-	120	120	400	30	0.29	0.30	0.32	0.34	0.36	0.322
-*	-	-	400	30	0.29	0.32	0.34	0.36	0.30	0.322
120*	-	-	400	30	0.35	0.34	0.34	0.34	0.32	0.338
-*	120	-	400	30	0.27	0.33	0.34	0.33	0.33	0.320
-*	-	60	400	30	0.34	0.32	0.34	0.36	0.33	0.338
120*	-	-	0	30	0.33	0.33	0.34	0.29	0.36	0.330
120*	-	-	400	0	0.34	0.28	0.31	0.30	0.37	0.320
120*	-	-	0	0	0.32	0.29	0.33	0.33	0.34	0.322

Key to P₂O₅ Treatments

PD = Plow Down

D = Disced In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 24

Potassium Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 C. R. Bayless Farm - Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					% Potassium					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	2.40	2.70	3.00	3.00	2.85	2.79
120*	-	-	0	30	2.65	2.75	2.80	3.25	2.30	2.75
120*	-	-	400	-	2.50	3.15	3.15	3.00	2.90	2.94
120*	-	-	0	-	3.15	3.10	3.15	2.75	2.90	3.01

Key to P₂O₅ Application

PD = Flow Down

D = Disced In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 25

Calcium Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 C. R. Bayless Farm - Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					% Calcium Content					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	1.20	1.10	1.10	1.20	1.65	1.25
120*	-	-	0	30	1.55	1.32	1.20	1.10	1.45	1.32
120*	-	-	400	0	1.28	1.00	1.28	1.20	1.55	1.26
120*	-	-	0	0	1.28	1.25	1.28	1.45	1.55	1.36

Key to P₂O₅ Treatments
 PD = Flow Down
 D = Discd In
 SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 26

Magnesium Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 C. R. Bayless Farm - Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					% Magnesium					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	0.26	0.20	0.19	0.23	0.33	0.24
120*	-	-	0	30	0.29	0.24	0.21	0.23	0.33	0.24
120*	-	-	400	0	0.25	0.20	0.23	0.23	0.28	0.24
120*	-	-	0	0	0.25	0.25	0.25	0.29	0.29	0.27

Key to P₂O₅ Applications

PD = Plow Down

D = Disced In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 27

Manganese Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 C. R. Bayless Farm - Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					PPM Manganese					
PD	P ₂ O ₅ D	SA	K	ZnSO ₄	Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
-	-	-	400	30	40	40	30	40	40	38
120*	-	-	0	30	40	42	40	40	50	42.4
120*	-	-	400	0	40	30	30	40	40	36
120*	-	-	0	0	40	40	40	40	40	40

Key to P₂O₅ Applications

PD = Plow Down

D = Discd In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)

Appendix Table No. 28

Zinc Content of Alfalfa as Affected by
 Several Fertilizer Treatments
 C. R. Bayless Farm - Powell Butte, Oregon - 1968

Fertilizer Application #/Acre					PPM Zinc					
PD	P ₂ O ₅				Rep. I	Rep. II	Rep. III	Rep. IV	Rep. V	Average
	D	SA	K	ZnSO ₄						
-	-	-	400	30	20	15	20	15	20	18
120*	-	-	0	30	25	19	18	15	18	19
120*	-	-	400	-	13	18	20	15	18	18
120*	-	-	0	-	10	18	20	18	15	16

Key to P₂O₅ Applications

PD = Plow Down

D = Discd In

SA = Surface Annual

* 60# P₂O₅/Acre banded at seeding as MAP (11-48)